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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/863,402 | 05/24/2001 | Norio Takahashi | 05225.0633 | 9191 |

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EXAMINER

ELKASSABGI, HEBA

ART UNIT PAPER NUMBER

2834

DATE MAILED: 08/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/863,402

Applicant(s)

TAKAHASHI ET AL.

Examiner

Heba Elkassabgi

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 May 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3,5-6, 8-11 are rejected under 35 U.S.C. 102(b) as being anticipated by Asano et al. (U.S. Patent 6008559).

3. Asano et al. discloses in Figure #1 a stator (1) having an armature coil (three-phase winding)(not shown) wherein a rotor (2) is configured for providing magnetic irregularities in a circumferential direction and that the rotor (2) includes permanent magnets (23) in a plurality of permanent magnet embedding holes (slits)(22). In which the rotor core (21), the magnetic flux of an armature passing through adjacent magnetic poles is canceled, and wherein the rotor (2) includes non-magnetic regions on a circumferential side of the permanent magnets (23). A plurality of projections (holes)(27) are configured to a fixed positional location of the permanent magnets (23), with the projections (hole)(27) projecting into the permanent magnet embedding holes (slits)(22) within the rotor core (21). Furthermore, the projections (holes)(27) are in a positional location for the permanent magnets (23), provided on opposite edges of the permanent magnet embedding holes (slits)(22) of the nonmagnetic regions. Wherein, a centrifugal force on the permanent magnet is supported by a face intersecting a

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direction of magnetization of the permanent magnet at right angles and on an opposite side of the permanent magnet embedding hole (slits)(22) to a side of the non-magnetic region. The projections (holes)(27) are in a positional location of the permanent magnets (23) that are provided on the edges of the permanent magnet embedding holes (slits) (22) on the sides of the non-magnetic regions.

4. In regards to Claim 5, Asano et al. discloses the claimed invention except for the percentage of contact of the permanent magnet and the projection for positional location of the permanent magnet. It would have been obvious to one having ordinary skill in the art at the time the invention was made to base the positional length of the permanent magnet with the projections in relation to one another, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215.

5. In regards to Claims 8-11, Asano et al. discloses the claimed invention except for the percentage of the thickness of the permanent magnet in relation to thickness of the wall region of the rotor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to base the wall thickness of the rotor core in relation to the position of the permanent magnet, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272,205 USPQ 215.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asano et al. and further in view of Nagate et al. (U.S. Patent 5369325).

8. Asano et al. discloses in Figure #1 a stator (1) having an armature coil (three-phase winding)(not shown) wherein a rotor (2) is configured for providing magnetic irregularities in a circumferential direction and that the rotor (2) includes permanent magnets (23) in a plurality of permanent magnet embedding holes (slits)(22). In which the rotor core (21), the magnetic flux of an armature passing through adjacent magnetic poles is canceled, and wherein the rotor (2) includes non-magnetic regions on a circumferential side of the permanent magnets (23). A plurality of projections (holes)(27) are configured to a fixed positional location of the permanent magnets (23), with the projections (hole)(27) projecting into the permanent magnet embedding holes (slits)(22) within the rotor core (21). Furthermore, the projections (holes)(27) are in a positional location for the permanent magnets (23), provided on opposite edges of the permanent magnet embedding holes (slits)(22) of the nonmagnetic regions. Wherein, a centrifugal force on the permanent magnet is supported by a face intersecting a direction of magnetization of the permanent magnet at right angles and on an opposite side of the permanent magnet embedding hole (slits)(22) to a side of the non-magnetic region. The

projections (holes)(27) are in a positional location of the permanent magnets (23) that are provided on the edges of the permanent magnet embedding holes (slits) (22) on the sides of the non-magnetic regions. However, Asano et al, does not disclose projection located at the center of the permanent magnet.

9. Nagate et al. illustrates in Figure 19, a rotor yoke (core)(21) having projections (projecting edges) (36) for positional location of the permanent magnets projecting at the center of the permanent magnet embedding holes (slots)(25) into recesses that correspond to the projections.

10. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asano et al. and further in view of Appilcants Prior Art (a.k.a. APA).

11. Asano et al. discloses in Figure #1 a stator (1) having an armature coil (three-phase winding)(not shown) wherein a rotor (2) is configured for providing magnetic irregularities in a circumferential direction and that the rotor (2) includes permanent magnets (23) in a plurality of permanent magnet embedding holes (slits)(22). In which the rotor core (21), the magnetic flux of an armature passing through adjacent magnetic poles is canceled, and wherein the rotor (2) includes non-magnetic regions on a circumferential side of the permanent magnets (23). A plurality of projections (holes)(27) are configured to a fixed positional location of the permanent magnets (23), with the projections (hole)(27) projecting into the permanent magnet embedding holes (slits)(22) within the rotor core (21). Furthermore, the projections (holes)(27) are in a positional location for the permanent magnets (23), provided on opposite edges of the

permanent magnet embedding holes (slits)(22) of the nonmagnetic regions. Wherein, a centrifugal force on the permanent magnet is supported by a face intersecting a direction of magnetization of the permanent magnet at right angles and on an opposite side of the permanent magnet embedding hole (slits)(22) to a side of the non-magnetic region. The projections (holes)(27) are in a positional location of the permanent magnets (23) that are provided on the edges of the permanent magnet embedding holes (slits) (22) on the sides of the non-magnetic regions. However, Asano et al, does not disclose a radiussed portion of a root for positional location of the permanent magnet.

12. Applicants Prior Art shows a radiussed portion of a root (3) of the projection for positional location of the permanent magnet (8) that is provided on a side of a face that is intersecting a direction of magnetization of the permanent magnet (8) at right angles and on an opposite side to a side of the non-magnetic region, for the purpose of improving magnetic flow within the rotor and between the rotor and the stator.

13. It would have been obvious to one of ordinary skill in the art to combine the structure of Asano and Nagate et al. for improving magnetic flow within the rotor and between the rotor and the stator.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Heba Elkassabgi whose telephone number is 703-305-2723. The examiner can normally be reached on 6:30 to 3:30 Monday through Friday.


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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nestor Ramirez can be reached on 703-308-1317. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3431 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

HYE
August 12, 2002


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